

WHITE KNIVES, CINNABAR AND GOLD
An Introduction to Intermountain Research
Investigations at Tosawihi Quarries, 1987 to 1991

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Here is introduced the Tosawihi Quarries Project, a program of archaeological investigation undertaken by Intermountain Research under contract to mining interests in the years 1987 to 1992. Here is sketched the architecture of research at Tosawihi in those years, wherein the nature and timing of archaeological inquiry responded to the demands of Federal review, of minerals exploration and development schedules, and of the technical and theoretical predilections of the Intermountain Research group. Opportunities and constraints inherent in the administrative house of the project are reviewed.

This introduction appeared first as a paper preliminary to a Tosawihi Quarries symposium presented by Intermountain Research at the 56th Annual Meeting of the Society for American Archaeology, New Orleans, 1991.

The Tosawihi Quarries are located on public lands in the north central Great Basin, about 50 miles east of the Nevada community of Winnemucca. The gently rolling steppe characterizing the Tosawihi region hosts cryptocrystalline rocks, properties of which have captured the attention of human beings for millennia. The prehistoric industry with which these papers are concerned focused on the rocks as toolstone. Historically, Euroamericans were interested in the rocks for the cinnabar they yielded for mercury production and, thereafter, prospectors for gold laid claim to Tosawihi. In 1987, plans for intensive exploration and development of gold properties triggered Federal review of mining propositions, and Intermountain Research began to study Tosawihi. After that, Intermountain Research fielded numerous expeditions in pursuit of the answers to questions administrative and scientific.

In 1987, a geologist fellow contacted Intermountain Research inquiring after our familiarity with the Tosawihi Quarries. We allowed as how our knowledge of Tosawihi, like that of most archaeologists practicing in Nevada, was pretty much anecdotal, derived from Mary Rusco's unpublished papers and from Julian Steward's ethnographic work among the Shoshone. We understood the Quarries to be the source of white chert toolstone that accounts for the Shoshone appellation White Knife, which appears in archaeological sites up and down the Humboldt River drainage, but we had not been there and no archaeological literature described the place. The caller explained that his company required the services of an archaeologist in connection with a mineral exploration program it was conducting in the vicinity of the Quarries and would we be interested in traveling up there for a one-day walkabout. Clearly, this would be an inspection; while we had a look at the Quarries, our potential client would have a look at us.

Driving the fifty miles of back road from Winnemucca to Tosawihi, we learned that exploratory drilling on four hundred foot centers had been underway for some months, that the company now wished to drill on one hundred foot centers, and that development was imminent. We learned, too, that the areal extent of minerals interests was pretty much coincidental with the nearly one thousand-acre heart of the Tosawihi Quarries as observed by Rusco between 1975 and 1980.

Arriving at the property, we stepped from the truck to what we later named the Pink Pits. We walked over Butterscotch Ridge, and toured Velvet Canyon. The geologist was interested to know if the seemingly endless fields of opalite flakes we were observing did indeed represent rocks modified by human agency, as he had been led to believe. Assuring him that no mistake had been made, we gave our host a short course in lithic technology as we hiked. By and by, our walkabout concluded, the delicate time arrived which decides the fate of many a potential client/contractor relationship. A scientist himself, the magnitude of Tosawihi as a subject of archaeological study had not escaped the geologist's notice and, intent upon assessing our ability to comprehend this, the fellow began to inquire how we might approach a study of Tosawihi. How could we possibly deal with all those rocks? Did we have sufficient expertise? Did our present workload allow the time? Responding with the equanimity of born liars, we replied that the vastness and complexity of Tosawihi merely represented one or another problem of sampling, that lithics was our middle name, and that we would make time.

Tosawihi overwhelmed, yet we could not then admit to it lest the possibility of observing it slip away; the Quarries daunted, but we ignored apprehension in pursuit of the research opportunities before us. However, we studied Tosawihi within an administrative framework known to the world of CRM as Section 106 compliance. Referring to Section 106 of the National Historic Preservation Act of 1966, this bit of legislation directs Federal agencies such as the Bureau of Land Management, which administers the Tosawihi region, to consider the effects of any undertaking it permits upon significant cultural resources. The law is implemented by the Code of Federal Regulations, Title 36, Part 800; regulations which prescribe the sequence and geographical context of archaeological study conducted under the aegis of Federal mandates. These are augmented by performance guidelines and standards particular to Nevada BLM jurisdictions, and, because the permitted undertaking at Tosawihi was minerals exploration and extraction, we were mindful of the Code of Federal Regulations, Title 43, Part 3800, which implemented Federal mining law.

Absent sufficient staff and budget, BLM districts often shift responsibility for Section 106 compliance to the proponents of undertakings in their districts, and that was the case at Tosawihi: We did BLM's work at the pleasure of The Ivanhoe Project. Please note that archaeological research was not the goal of the work. Rather, the goal of the work was satisfaction of the Section 106 process. The research provided the means to that end but, as we shall see, it progressed in ways peculiar and antithetical to logical inquiry.

Taking a look at the known archaeological landscape of Tosawihi at the time, one sees an oddly shaped polygon encompassing about fourteen hundred acres wherein occur nearly four hundred 'sites.' The archaeology of Tosawihi bunched up in this way because this was the shape of our study universe, the so-called area of potential effect, in CRM terms. More correctly, the Tosawihi Quarries constituted our initial survey area. Subsequently, tracts southwest and southeast of the Quarries were added, followed by a long transect extending north. Each of these areas, as we shall see, represented the location of some aspect of contemporary gold mining.

The geography of the research was defined by the geography of the undertaking. Always. And always, the sequence of data collection followed the sequence of mine development. Section 106 compliance proceeds stepwise: define the area of potential effect; inventory all sites in that area and assess their significance; determine the effects of the proposed undertaking on significant sites; mitigate adverse effects expected to accrue to significant sites. Completing the process is straightforward when a fully developed plan of operations for an undertaking is identified at the outset and when implementation of that plan is delayed until all steps in the Section 106 process have been completed. Mining projects, by definition, do not proceed in this manner. Mines expand and rearrange themselves, and every time some adjustment is proposed, the Section 106 process, while continuing with regard to applications already in the pipeline, must be initiated for new propositions. This means that research-in-progress cannot inform research-pending. Taken to a logical extreme, the problem of information lag can result in unchanging interpretations of site after site, completely escaping insights of the research that have gone before. Nonetheless, the integrity of Section 106 compliance will have been preserved.

The Tosawihi Quarries Project fell victim to information lag two years into the research, which had followed this sequence: We surveyed the area known as the Tosawihi Quarries in 1987 in response to minerals exploration plans, then, still in 1987, we surveyed the Western Periphery in response to a mine plan of operations. The Eastern Periphery corresponds to the location of ancillary mine facilities surveyed early in the 1988 field season. At various times in 1988, 1989, and 1990, we surveyed the Northern Corridor, which corresponds to the main access road to the mine. The 1988 field season saw underway a testing program that examined 67 sites identified by these surveys, all but two of them in study areas other than Tosawihi Quarries. The primary objective of the testing program was assessment of the significance and data potential of selected sites that would be affected by mine development, so that detailed mitigation plans could be developed and put into the Section 106 pipeline for review and approval in time for a 1989 season of excavation. The 364,000 artifacts recovered by testing were processed and laboratory data were collected, but analysis and reporting could not keep pace of the urgency of mine development, so that the logical order of the research went awry when the excavation of 25 tested sites preceded analysis and synthesis of the test data by two months. And so, while the test report describes methods, sites, features, stratigraphy, and artifacts, analysis of the data is conspicuously absent. The net result is that, to compensate for an inadequately informed approach to the subsequent 25-site excavation program, we felt compelled to err in favor of over sampling whenever uncertainty prevailed. Happily, nothing was lost, save elegance, and more than enough was gained.

Throughout the two years given over to the tasks just described, we addressed other Section 106 demands relating to the project, with brief forays into the field to do compliance work associated with the odd air quality monitoring station, road realignment, and the like. As well, we inventoried and evaluated historic period sites occurring in the original survey parcel, developed a comprehensive Tosawihi cultural resources management plan for BLM, explicated the research issues suggested by Tosawihi sites, and drafted data recovery plans endlessly. Completion of the 1989 excavations saw Phase I of mine construction in compliance with Section 106, and we now had merely to make sense of a scosh under one and a half million artifacts, trench samples by the hundred, and miles of stratigraphy. The dozen people responsible for various aspects of data collection and analysis devoted six weeks to hammering out a post-field work plan, beginning with an outline of the final report. From there, the one hundred three tasks that would see the report complete were identified. Task leaders calculated their support requirements, critical paths were identified, a performance schedule was established, and from all this, a budget derived. The plan was approved and funded, and we went to work.

The final report, of which these associated papers constitute a preview, was completed shortly after this writing, schedule and budget intact due, in part, to a brisk business in in-house resource trading. In the parking lot market of the time, sixteen principal investigator hours and two hundred eleven 4WD vehicle miles would fetch one extended count radiocarbon assay or two season passes (bleachers) to any major league ballpark on the west coast. The final report appears in this collection.

A complete administrative sketch of the Tosawihi research must mention that the 1990 season saw us in the field once again, this time excavating an extensive and complex quarry locality in the Tosawihi Quarries proper, where we had previously investigated only a handful of loci. The expedition was fielded just as data analysis for the 1989 work was getting underway, but by now we had learned a thing or two, methodologically speaking, from which this new adventure benefited. And because analysis of 1990 data remained sufficiently behind that of 1989, the one would inform the other. And finally, a planned second phase of mine development then on the boards soon would prompt the areally extensive sample survey of the Tosawihi region for which the existing work begged. In sum, this collection of papers relies on data gathered from intensive investigation of seventy sites, nearly all of them adjacent, but not in, the Tosawihi Quarries.

Having described the CRM venue of the Tosawihi investigations, an examination of limitations and benefits inherent in it might inform the larger debate over CRM versus academically enabled archaeological research. Looking first at limitations, three are worth mention. One, the problem of information lag, is apparent in the foregoing discussion. A Tosawihi research effort equivalent to twenty-seven person years was compressed into four. We endeavored to mitigate data lag through judicious manipulation of performance schedules, and often succeeded, but there were occasions when CRM and Section 106 confounded every mitigating strategy. Secondary to information lag spawned by compressed timelines, every student of Tosawihi chafed at denied opportunities to pursue interesting lines of inquiry that manifested too late in the current program to be accommodated by unforgiving, but not necessarily unforgivable, schedules or budgets.

But these two are limitations that do not respect venue and they confront every researcher of dependent means. On the other hand, a third limitation is clearly a function of procedural constraints that CRM imposes on the logic of the order of archaeological inquiry; constraints that do not impede the scholar operating from an academic base. Responding to an in-house survey soliciting perceptions of the good and the bad in our venue, the Tosawihi working group were unanimous in their view that the sequence of Tosawihi inquiry, which was dictated by the geographical demands of Section 106 compliance, was the single most limiting factor in our attempt to understand the Tosawihi Quarries. One of our group observed that ".... some of our real questions linger because we have been granted no invitation to look long and hard at the main body of the quarry. Our work has been a little like palmistry, diagnosing proximal conditions from distal symptoms." Similarly, the fruits of four years' labor remained unenlightened by a regional perspective, and connections between Tosawihi toolstone industries and the socio-economic systems they served remained elusive because the regions beyond mine plans of operation were beyond our purview.

But if the limiting factors of the CRM approach are noteworthy, so too are the remarkable benefits that accrued to research at Tosawihi. Theretofore, the Quarries had suffered inattention born of a perception of the technical difficulties of quarry study. But CRM corrected for scale and permitted concentration on the Quarries as a class of phenomena with theoretical significance as well as relevance to Great Basin prehistory, and funded methodological solutions to the technical problems presented by Ericson's

(1984) “.... shattered, overlapping, sometimes shallow, nondiagnostic, undatable, unattractive, redundant, and at times voluminous material record.” Tosawihi investigations were augmented by mass debitage analysis on a massive scale, by experimental quarrying and heat treatment, by large scale replication studies, by computer-enhanced surveying and mapmaking, by aerial photogrammetry, by mechanized crosscutting of quarry features, by ultraviolet light sourcing, and by radiocarbon assay. The regional sample we desired came finally to hand. Thus, CRM rendered the Quarries approachable and assured adequate support of their investigation.

Mindful of the independence our venue afforded us, clearly research issues were ours to decide, data needs ours to define, and theoretical predilections ours to satisfy. Geographical constraints notwithstanding, what got done at Tosawihi, and how, was limited only by the skill and scholarly inclinations of its observers.